

The latest word about professionally applied topical fluoride . . . (11/06)

American Dental Association Council on Scientific Affairs. Professionally applied topical fluoride evidence-based clinical recommendations. J Am Dent Assoc 2006;137:1151-1159.

Professionally applied topical fluoride has been proven to be an effective caries-prevention agent. The American Dental Association (ADA) Council on Scientific Affairs recently published its latest evidence-based guidance and recommendations concerning professionally applied topical fluoride. The ADA emphasizes that the evidence-based clinical recommendations are intended to provide guidance, and are not a standard of care, requirements, or regulations. The individual dentist should make treatment decisions that are best for the individual patient and continually reassess the patient's health status and susceptibility to oral disease, as defined in the caries risk criteria found in Table 1.

Table 1: Caries Risk Assessment

Low Caries Risk	All Age Groups	1. No incipient or cavitated primary or secondary carious lesions during the past three years 2. No caries risk factors*
Moderate Caries Risk	Younger than 6 years	No incipient or cavitated primary or secondary carious lesions during the past 3 years but at least one caries risk factor*
	Older than 6 years	Any of the following: 1. 1 or 2 incipient or cavitated primary or secondary carious lesions in the past 3 years 2. No incipient or cavitated primary or secondary carious lesions in the past 3 years but presence of at least one caries risk factor*
High Caries Risk	Younger than 6 years	Any of the following: 1. Incipient or cavitated primary or secondary carious lesion during the past 3 years 2. Presence of multiple caries risk factors* 3. Low socioeconomic status 4. Suboptimal fluoride exposure 5. Xerostomia
	Older than 6 years	Any of the following: 1. 3 or more incipient or cavitated primary or secondary carious lesions in the past 3 years 2. Presence of multiple caries risk factors* 3. Suboptimal fluoride exposure 4. Xerostomia

*Caries risk factors: high cariogenic bacteria titers, poor oral hygiene, prolonged nursing (bottle or breast), poor family dental health, developmental or acquired enamel defects, genetic abnormality of teeth, many multisurface restorations, chemotherapy or radiation therapy, eating disorders, drug or alcohol abuse, irregular dental care, cariogenic diet, active orthodontic treatment, presence of exposed root surfaces, restoration overhangs and open margins, and physical or mental disability with inability or unavailability of performing proper oral health

Modified from J Am Dent Assoc 2006;137:1155.

The following are the conclusions of the Council on Scientific Affairs that are based at least one randomized clinical trial or systematic reviews of multiple randomized controlled trials.

- 1. Fluoride gel is effective in preventing caries in school-aged children.**
- 2. Patients whose caries risk is low may not receive additional benefit from professionally topical fluoride application.**
- 3. Professionally applied topical fluoride gel treatments consisting of four minutes or more have**

been shown to reduce caries. There are no clinical studies demonstrating the effectiveness of one-minute fluoride gel applications.

4. Fluoride varnish applied every six months is effective in preventing caries in the primary and permanent dentition of children and adolescents.

5. Two or more applications of fluoride varnish per year are effective in preventing caries in high-risk populations.

6. Four-minute fluoride foam applications applied every six months are effective in caries prevention in the primary dentition and newly erupted permanent first molars.

Table 2 summarizes the ADA Council on Scientific Affairs recommendations for the use of professionally applied topical fluoride. The Council does point out that laboratory data has demonstrated the equivalence of fluoride release of topical fluoride foam to topically-applied gels. However, only two clinical trials have been published that have evaluated the fluoride foam's effectiveness. Due to the scarcity of clinical information, the recommendations of fluoride varnish and gels have not been extrapolated to fluoride foams. Furthermore, since there is insufficient evidence that addresses the efficacy of sodium fluoride (NaF) versus acidulated phosphate fluoride (APF), the recommendations do not distinguish between these two formulations. Fluoride gel and foam application times should not be less than four minutes. Although evidence suggests that fluoride varnish is effective in caries prevention, the Council does recognize that its recommendation for fluoride varnish remains an "off-label" use of this product, as fluoride varnishes have only been approved by the US Food and Drug Administration (FDA) for the treatment of hypersensitive exposed root surfaces and also as a cavity varnish. Furthermore, it is recommended that all age and risk groups use the appropriate amount of fluoride-containing toothpaste when brushing twice a day and additional preventive interventions (e.g., at home fluoride products, pit and fissure sealants, anti-bacterial therapy) should be considered for individuals in the moderate and high risk caries groups.

Table 2: 2006 Evidence-Based Clinical Recommendations for Professionally Applied Topical Fluoride			
Risk Category	Recall Patient Age Category		
	< 6 Years	6 to 18 Years	> 18 Years
	Recommendation		
Low	May not receive additional benefit from professional topical fluoride application	May not receive additional benefit from professional topical fluoride application	May not receive additional benefit from professional topical fluoride application
Moderate	Varnish application at 6-month intervals	Varnish application at 6-month intervals OR Fluoride gel applications at 6-month intervals	Varnish application at 6-month intervals OR Fluoride gel applications at 6-month intervals
High	Varnish application at 6-month intervals OR Varnish application at 3-month intervals	Varnish application at 6-month intervals OR Varnish application at 3-month intervals OR Fluoride gel application at 6-month intervals OR Fluoride gel application at 3-month intervals	Varnish application at 6-month intervals OR Varnish application at 3-month intervals OR Fluoride gel application at 6-month intervals OR Fluoride gel application at 3-month intervals

Modified from J Am Dent Assoc 2006;137:1157.

DECS Comment: Professionally applied topical fluoride is a proven caries-prevention agent for individuals with moderate and high caries risk. These most recent recommendations from the ADA Council on Scientific Affairs state that the low caries risk population may not benefit from professionally-applied topical fluoride. Furthermore, this is one of the first recommendations from the ADA Council on Scientific Affairs that endorses the value and "off label" use of fluoride varnish in moderate and high caries risk individuals. Local clinics should strongly consider acquiring a fluoride varnish material for their Preventive Dentistry program and providing training in its proper application. The Standard of Care for Preventive Dentistry in Air Force dental clinics has not changed and can be found in the [Air Force Medical Service Clinical Practice Guidelines](#). [The Air Force Population-Based Dental Metrics for Caries Risk Assessment](#) have slightly different parameters for caries risk categories (low, moderate, high) than the ADA risk categories. The Air Force parameters should continue to be used for caries risk assessment during periodic dental examinations performed on active duty Air Force patients.

References:

1. Featherstone JDB. The Science and Practice of Caries Prevention. J Am Dent Assoc 2000;131:887-899.
2. Chu CH, Lo ECM. A review of sodium fluoride varnish. Gen Dent 2006;54:247-253.
3. Air Force Medical Service Clinical Practice Guidelines. Available at <https://airforcemedicine.usaf.afpims.mil>. Accessed November 2006.
4. Air Force Population - Based Dental Metrics for Caries Risk Assessment. Available at <https://airforcemedicine.usaf.afpims.mil>. Accessed November 2006.